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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No.	FOCKE11
First Inventor	FOCKE, Heinz
Title	Process and apparatus for Producing Hinge-Lid Boxes for Cigarettes
Express Mail Label No.	EL682511852US

11/28/00 jc520 U.S. PTO 09/724016 11/28/00

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231

1. [X] Fee Transmittal Form *(e.g., PTO/SB/17)* *(Submit an original and a duplicate for fee processing)*
2. [ ] Applicant claims small entity status. See 37 CFR 1.27.
3. [X] Specification [*Total Pages* 14] *(preferred arrangement set forth below)*
   - Descriptive title of the invention
   - Cross References to Related Applications
   - Statement Regarding Fed sponsored R & D
   - Reference to sequence listing, a table, or a computer program listing appendix
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings *(if filed)*
   - Detailed Description
   - Claim(s)
   - Abstract of the Disclosure
4. [X] Drawing(s) (35 U.S.C. 113) [*Total Sheets* 4]
5. Oath or Declaration [*Total Sheets* 3]
   - a. [X] Newly executed (original or copy)
   - b. [ ] Copy from a prior application (37 C.F.R. § 1.63(d)) *(for a continuation/divisional with Box 17 completed)*
     - i. [ ] DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. 1.63(d)(2) and 1.33(b).
6. [ ] Application Data Sheet. See 37 CFR 1.76
7. [ ] CD-ROM or CD-R in duplicate, large table or Computer Program *(Appendix)*
8. Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*
   - a. [ ] Computer Readable Copy
   - b. Specification Sequence Listing on:
     - i. [ ] CD-ROM or CD-R (2 copies); or
     - ii. [ ] paper
   - c. [ ] Statement verifying identify of above copies

ACCOMPANYING APPLICATION PARTS

9. [X] Assignment Papers (cover sheet & document(s))
10. [ ] 37 C.F.R. § 3.73(b) Statement *(when there is an assignee)* [X] Power of Attorney
11. [ ] English Translation Document *(if applicable)*
12. [ ] Information Disclosure Statement (IDS)/PTO-1449 [ ] Copies of IDS Citations
13. [X] Preliminary Amendment
14. [X] Return Receipt Postcard (MPEP 503) *(Should be specifically itemized)*
15. [X] Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
16. [ ] Other: ....

17 If a CONTINUING APPLICATION, *check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:*

[ ] Continuation [ ] Divisional [ ] Continuation-in-part (CIP) of prior application No: ...../.....

Prior application information: Examiner _____ Group / Art Unit: _____

For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

18. CORRESPONDENCE ADDRESS

[X] *Customer Number or Bar Code Label* (Insert Custon...) 006980 PATENT AND TRADEMARK OFFICE ...e) *or* [ ] *Correspondence address below*

Name	Ryan A. Schneider				
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Signature		Date	28 November 2000

Burden Hour Statement. This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231.

FEE TRANSMITTAL for FY 2000

Patent fees are subject to annual revision.
Small Entity payments must be supported by a small entity statement, otherwise large entity fees must be paid. See Forms PTO/SB/09-12.
See 37 C.F.R. § § 1.27 and 1.28.

TOTAL AMOUNT OF PAYMENT | **($) 750.00**

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	FOCKE, Heinz STILLER, Martin
Examiner Name	
Group / Art Unit	
Attorney Docket No.	FOCKE11

METHOD OF PAYMENT

1. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:

Deposit Account Number: 20-1507

Deposit Account Name: TROUTMAN SANDERS LLP

☒ Charge Any Additional Fee Required Under 37 CFR 1 16 and 1.17

☐ Applicant claims small entity status. See 37 CFR 1.27

2. ☒ **Payment Enclosed:**
☒ Check ☐ Credit card ☐ Money Order ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
101	710	201	355	Utility filing fee	710.
106	320	206	180	Design filing fee	
107	490	207	245	Plant filing fee	
108	710	208	355	Reissue filing fee	
114	150	214	75	Provisional filing fee	

SUBTOTAL (1) ($) 710.00

2. EXTRA CLAIM FEES

			Extra Claims		Fee from below		Fee Paid
Total Claims	19	- 20** =	0	X	$	=	$0
Independent Claims	3	- 3** =	0	X	$	=	$0
Multiple Dependent						=	0

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
103	18	203	9	Claims in excess of 20
102	80	202	40	Independent claims in excess of 3
104	270	204	135	Multiple dependent claim, if not paid
109	80	209	40	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet.	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for ex parte reexamination	
112	920*	112	920*	Requesting publication of SIR after Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	390	216	195	Extension for reply within second month	
117	890	217	445	Extension for reply within third month	
118	1,390	218	695	Extension for reply within fourth month	
128	1,890	228	945	Extension for reply within fifth month	
119	310	219	155	Notice of Appeal	
120	310	220	155	Filing a brief in support of an appeal	
121	270	221	135	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,240	241	620	Petition to revive - unintentional	
142	1,240	242	620	Utility issue fee (or reissue)	
143	440	243	220	Design issue fee	
144	600	244	300	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Petitions related to provisional applications	
126	240	126	240	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	40
146	710	246	355	Filing a submission after final rejection (37 CFR 1.129(a))	
149	710	249	355	For each additional invention to be examined (37 CFR § 1.129(b)	
179	710	279	355	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify) ______

SUBTOTAL (3) ($) 40.00

* Reduced by Basic Filing Fee Paid

SUBMITTED BY		Complete (if applicable)			
Name (Print/Type)	Ryan A. Schneider	Registration. No. (Attorney/Agent)	45,083	Telephone	404.885.2773
Signature	[signature]			Date	28 November 2000

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Patent
Customer No. 006980
Docket No. FOCKE11
Express Mail No.: 682511852US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	
	)	
FOCKE, Heinz et al.	)	Group Art Unit:
	)	
Serial No.:	)	Examiner:
	)	
Filed:	)	
	)	
For: PROCESS AND APPARATUS FOR PRODUCING HINGE-LID BOXES FOR CIGARETTES	)	

PRELIMINARY AMENDMENT

Box: Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

Atlanta, Georgia 30308-2216

28 November 2000

Sir:

Prior to examining the above-identified application, please make the following amendments:

IN THE SPECIFICATION

Page 1, before line 1, replace "Description", with --Field of the Invention--;

Page 1, before line 7, insert the following heading --Background of the Invention--;

Page 1, before line 15, insert the following heading --Summary of the Invention--;

Page 3, before line 8, insert the following heading --Brief Description of the Drawings--;

Page 3, before line 39, insert the following heading --Detailed Description of a Preferred Embodiment--.

Page 9, before line 1, insert --We Claim:--

IN THE CLAIMS

Please delete Claims 1-9, and add the following new claims 10-28:

10. (new) A process for producing a dimensionally stable pack made of cardboard, in particular a hinge-lid box for cigarettes, comprising the following sequential steps:

(a) providing the pack with an outer wrapper having folding tabs, the outer wrapper made of sealable film;

(b) folding the tabs into a region of tab overlap;

(c) temporarily maintaining the tabs in the region of tab overlap by tacking or by tack connection; and

(d) fixedly maintaining the tabs in the region of tab overlap by full-surface sealing.

11. (new) The process according to Claim 10, wherein step (c) of temporarily maintaining the tabs in the region of tab overlap is by small surface-area spot sealing.

12. (new) The process according to Claim 10, wherein step (c) of temporarily maintaining the tabs in the region of tab overlap is by small surface-area linear sealing.

13. (new) The process according to Claim 10, wherein the outer wrapper is a film that shrinks when subjected to heat treatment, and the process further comprising the sequential step (e) of heat treating the outer wrapper to generate shrinkage of the outer wrapper.

14. (new) The process according to Claim 10, the outer wrapper having folding side tabs and at least one set of additional folding tabs selected from the group consisting of folding end wall tabs and folding base wall tabs, wherein step (a) of providing the pack with an outer wrapper is by folding a blank of film, the blank forming the outer wrapper, around the pack in a tubular shape, and wherein the tabs of steps (b-d) are the side tabs, the process further comprising the following sequential steps:

(e) folding the at least one set of additional folding tabs into a region of tab overlap; and

(f) temporarily maintaining the at least one set of additional folding tabs in the region of tab overlap by tacking or by tack connection.

15. (new) The process according to Claim 13, the outer wrapper having folding side tabs and at least one set of additional folding tabs selected from the group consisting of folding end wall tabs and folding base wall tabs, wherein step (a) of providing the pack with an outer wrapper is by folding a blank of film, the blank forming the outer wrapper, around the pack in a tubular shape, and wherein the tabs of steps (b-d) are the side tabs, the process further comprising the following sequential steps before step (e) but after step (d):

(i) folding the at least one set of additional folding tabs into a region of tab overlap; and

(ii) temporarily maintaining the at least one set of additional folding tabs in the region of tab overlap by tacking or by tack connection.

16. (new) The process according to Claim 14, wherein step (c) of temporarily maintaining the tabs in the region of tab overlap is by small surface-area spot sealing.

17. (new) The process according to Claim 14, wherein step (c) of temporarily maintaining the tabs in the region of tab overlap is by narrow continuous linear sealing.

18. (new) The process according to Claim 14, wherein step (c) of temporarily maintaining the tabs in the region of tab overlap is by narrow interrupted linear sealing.

19. (new) The process according to Claim 14, wherein step (f) of temporarily maintaining the at least one set of additional folding tabs in the region of tab overlap is by two spaced-apart, transverse tacking strips.

20. (new) A process for producing dimensionally stable packs made of cardboard, in particular hinge-lid boxes for cigarettes, comprising the following sequential steps:

(a) providing a plurality of packs;

(b) providing an outer wrapper of shrink-wrap film for each pack, the outer wrapper having at least one set of folding tabs selected from the group consisting of folding end wall tabs and folding base wall tabs;

(c) inserting a pack in communication with the outer wrapper into a pocket of a folding turret in such a way that partially overlapping side tabs are formed from the outer wrapper;

(d) temporarily maintaining the side tabs in a region of side tab overlap by tacking or by tack connection while the pack remains in the pocket of the folding turret;

(e) folding the remaining surface area of the outer wrapper around the pack while the pack is removed from the pocket of the folding turret;

(f) temporarily maintaining the at least one set of additional folding tabs in the region of tab overlap;

(g) fixedly maintaining the tabs in the region of tab overlap by full-surface sealing.

21. (new) The process according to Claim 20, wherein step (b) of providing an outer wrapper of shrink-wrap film for each pack is by a blank unit providing a continuous material web of film, wherein step (c) of inserting a pack in communication with the outer wrapper into a pocket of a folding turret is by a first horizontal pack path, wherein upon removing the pack after step (e), the pack is positioned onto a horizontal folding path, wherein step (f) of temporarily maintaining the at least one set of additional folding tabs in the region of tab overlap is provided in an upright pack tower, and wherein the step (g) of fixedly maintaining the tabs in the region of

tab overlap by full-surface sealing is provided by sealing tools in the region of the pack tower and sealing jaws in the region of a sealing path.

22. (new) Apparatus for providing an outer wrapper made of thin film, preferably shrink-wrap film, on dimensionally stable packs made of thin cardboard or the like, in particular on hinge-lid boxes for cigarettes, comprising:

(a) a folding assembly for providing the outer wrapper in tubular form on the pack;

(b) at least one tacking station for providing a tacking seal in the region of an overlap of side tabs of the outer wrapper; and

(c) at least one sealing station for the preferably full-surface sealing of the folding tabs in the region of the overlaps.

23. (new) The apparatus of Claim 22, wherein the folding assembly is a folding turret.

24. (new) The apparatus of Claim 22, wherein the sealing station is a sealing path.

25. (new) The apparatus of Claim 23 further comprising tacking elements, wherein the tacking stations for tacking the side tabs are assigned to the folding turret, with the tacking elements outside the movement path of the folding turret, it being possible for the tacking elements, which carry out the tacking operation, to be moved against the radially outwardly directed, folded side tabs.

26. (new) The apparatus of Claim 23, the outer wrapper further has end wall folding tabs and base wall folding tabs, wherein folding of the end wall folding tabs and base wall folding tabs can be completed in a horizontal folding path adjoining the folding turret, and in that further tacking elements are arranged at the end of the folding path in order to provide the tacking strips in the region of the folded end wall folding tabs and base wall folding tabs.

27. (new) The apparatus of Claim 25, the outer wrapper further has end wall folding tabs

and base wall folding tabs, wherein folding of the end wall folding tabs and base wall folding tabs can be completed in a horizontal folding path adjoining the folding turret, and in that further tacking elements are arranged at the end of the folding path in order to provide the tacking strips in the region of the folded end wall folding tabs and base wall folding tabs.

28. (new) The apparatus of Claim 23, wherein following the tacking operation, the outer wrapper first of all can be sealed over the full surface area in the region of the side tabs by a sealing tool and then, in the region of a sealing path, can be sealed over the full surface area on the end wall and base wall by sealing jaws, and in that the packs can then be conveyed through a shrink-wrap station.

IN THE ABSTRACT

Please amend the abstract as follows:

Process for producing packs [(10)] made of thin cardboard with an outer wrapper [(13)] made of shrink-wrap film. Folding tabs [(20, 21; 23, 24, 25, 26)] of the outer wrapper[(13)] are connected to one another by full-surface-area heat sealing. The shrink-wrapping process for the outer wrapper[(13)] may be initiated as a result. In order to ensure a correct form of the outer wrapper [(13)], the folding tabs [(20, 21; 23, 24, 25, 26)], prior to the full-surface-area sealing operation, are connected to one another by a tack seal, with small, limited sealing surface areas, and are then sealed over the full surface area.

REMARKS

The present Preliminary Amendment is presented in an effort to provide Headings for the application, and to rewrite European style Claims 1-9 to conform to U.S. practice.

Should the Examiner have any questions or reservations regarding the present Preliminary Amendment, the Examiner is invited to telephone the undersigned attorney at 404.885.2773.

Respectfully submitted,

Ryan A. Schneider
Registration No. 45,083

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express class mail in an envelope addressed to: Assistant Commissioner for Patents, BOX: PATENT APPLICATION Washington, D.C. 20231, on 28 November 2000

Kimberly L. Weems
Name of Applicant Assignee, or Registered Representative

Kimberly L. Weems
Signature

November 28, 2000
Date

TROUTMAN SANDERS LLP
Bank of America Plaza, Suite 5200
600 Peachtree Street, N.E.
Atlanta, Georgia 30308-2216
404.885.2773

Patent
Customer No.: 006980
Express Mail No.: EL682511852US
Express Mail Date: 28 November 2000
Docket No.: Focke11
Document No.: 651357

APPLICATION FOR LETTERS PATENT
UNITED STATES OF AMERICA

Be it known that we, Heinz Focke, a citizen of Germany, residing at Moorstraße 64, Verden 27283, Germany and Martin Stiller, a citizen of Germany, residing at Döhlberger Straße 35, Verden 27283, Germany, have invented certain new and useful improvements in a

PROCESS AND APPARATUS FOR PRODUCING HINGE-LID BOXES FOR CIGARETTES

of which the following is a specification.

TROUTMAN SANDERS LLP
Bank of America Plaza, Suite 5200
600 Peachtree Street, N.E.
Atlanta, Georgia 30308-2216 USA
404.885.2773

Description

The invention relates to a process for producing (dimensionally stable) packs made of (thin) cardboard with an outer wrapper made of thin film, in particular a hinge-lid box for cigarettes. The invention also relates to an apparatus for producing such packs and/or for carrying out the process.

It is common in packaging technology to provide dimensionally stable packs, consisting in particular of cardboard, with an outer wrapper made of thin, transparent film. Such an outer wrapper is common, in particular, in cigarette packs of the hinge-lid type. Before the pack is opened for the first time, the outer wrapper, which is usually provided with a tear-open strip, is removed.

The invention concerns measures for the improved production of such packs, in particular hinge-lid packs for cigarettes.

The object of the invention is to ensure an improved, in particular fold-free appearance of the outer wrapper, to be precise by virtue of the film being shrunk.

In order to achieve this object, the process according to the invention is characterized by the following features:

a) the outer wrapper consists of a shrink-wrapping film,

b) the pack provided with the outer wrapper is subjected to a shrink wrapping and/or heat treatment,

c) prior to the shrink-wrapping treatment, folding tabs of the outer wrapper are connected to one another by large-surface-area heat sealing, and, prior to the heat sealing operation, the folding tabs are (temporarily) fixed in their folding position by tacking.

The invention is based on the finding that, upon initiation of the shrink-wrapping and/or heat treatment, the outer wrapper has to be completely finished, that is to say all the folding tabs have to be folded into the correct position and fixed in said position. In order to connect the folding tabs to one another, in particular in the region of the end wall, base wall and side wall, use is made of large-surface-area sealing elements which subject the folding tabs to the action of heat, usually over a large surface area and/or over the entire surface area of the pack, in order to bring about heat sealing of the folding tabs. The shrink-wrapping process of the outer wrapper is initiated in this case. This results, in particular with sealing steps which follow one after the other in time or space, in undesired, permanent deformations of the outer wrapper. In the invention, as a result of the preliminary sealing and/or preliminary tacking, fixing of the outer wrapper in the correct folding position is completed without a shrink-wrapping treatment being initiated by said tacking and/or preliminary sealing. It is then possible for the pack to be subjected directly to a shrink-wrapping treatment or to be sealed over a large surface area in the region of the folding tabs in the conventional manner.

The apparatus according to the invention, as part of a packaging machine, is designed such that arranged upstream of a sealing station and/or sealing subassemblies, for the folding tabs, are tacking elements which bring about tacking and/or preliminary sealing of the folded outer wrapper in the region of the folding tabs.

Further details of the invention are explained in more detail below with reference to exemplary embodiments of the pack according to the invention and of an apparatus. In the drawings:

Figure 1 shows a pack, namely a hinge-lid box with ready sealed side tabs,

Figure 2 shows the hinge-lid box according to Figure 1 with ready sealed end tabs and base tabs,

Figure 3 shows the pack with partially folded outer wrapper and tacked side tabs,

Figure 4 shows an illustration corresponding to Figure 3 with likewise tacked side tabs,

Figure 5 shows the pack according to Figure 3 with tacked end tabs and base tabs,

Figure 6 shows a schematic side view of an apparatus for producing and/or sealing and shrink-wrapping an outer wrapper of a pack,

Figure 7 shows a detail of the apparatus according to Figure 6, namely a section along section plane VII-VII of a folding turret,

Figure 8 shows a view of a detail of the apparatus according to Figure 6 in accordance with arrow VIII.

The drawings concern a cubical pack 10 of the hinge-lid-box type for cigarettes. The pack 10 comprises a blank of thin

cardboard. In accordance with the conventional construction, the pack comprises a box part 11 and a lid 12.

The pack 10 is enclosed by an outer wrapper 13 made of thin film, to be precise a shrink-wrapping film. The outer wrapper 13 forms, in accordance with the configuration of the pack 10, large-surface-area walls, namely a front wall 14 and rear wall 15, narrow, elongate side walls 16 and 17 and an end wall 18 and base wall 19.

The outer wrapper 13 forms folding tabs which are connected to one another by heat sealing. In the region of the side wall 16, side tabs 20 and 21 of the blank of the outer wrapper 13 form a strip-like overlap 22. The latter extends over the entire length of the outer wrapper 13 (Figures 3 and 4). The side tabs 20, 21 are connected to one another by sealing in the region of the overlap 22, to be precise over the entire surface area of the overlap 22, as is illustrated in Figure 1 by the blackened sealing surface areas.

The end wall 18 and base wall 19 likewise comprise folding tabs, to be precise inner transverse tabs 23, 24 and outer, trapezoidal longitudinal tabs 25, 26. The tabs 23..26 partially overlap one another. In Figure 2, the overlap region, and thus the region of the tabs 23..26 which are connected to one another by sealing, is illustrated as a blackened and/or hatched surface area.

Providing the large-surface-area seals in the area of the overlap 22 and of the base wall 19 brings about at least the initiation of the shrink-wrapping process as far as the outer wrapper 13 is concerned. This is disadvantageous, in particular, when the operations of sealing the overlap 22, on the one hand, and sealing the end wall 18 and base wall 19, on the other hand, are carried out in successive steps.

In order to ensure a precise form and position of the outer wrapper 13 despite successive sealing steps, the folding tabs are connected to one another by tacking in preceding steps, the operation of providing the tacking being associated with a small and/or locally limited supply of heat.

First of all, on account of the sequence of folding steps, tacking is provided in the region of the overlap 22 of the side tabs 20, 21. In the exemplary embodiment of Figure 3, said tacking comprises small-surface-area spot seals 27. A plurality of circular or oval spot seals 27 are provided along the (non-folded) overlap 22, to be precise in a spaced apart manner. At least in each case one spot seal 27 is located in the region of those regions of the outer wrapper which project beyond the pack 10 and are intended for forming the transverse tabs 23.

An alternative is shown in Figure 4, to be precise, by a sealing strip 28 which extends over the entire length of the blank and/or of the (non-folded) overlap 22. Said sealing strip is of comparatively narrow width, for example approximately 2 mm. This gives a connection between the side tabs 20, 21 which is sufficient for the rest of the folding process, without the shrink-wrapping process for the outer wrapper 13 being initiated as a result of the supply of heat.

Thereafter, folding of those parts of the outer wrapper which project beyond the pack 10 is completed, the end wall 18 and base wall 19 being formed in the process. In order to fix the folding tabs 23 .. 26, likewise small-surface-area tacking connections produced by heat sealing, namely in each case two tacking strips 29, 30, are provided. These are provided such that all the folding tabs of the end wall 18 and base wall 19 are covered, that is to say are connected to one another locally. This is because the tacking strips 29, 30 are located in a region in which transverse tabs 23 or 24 and the two longitudinal tabs 25, 26 overlap one another in each case.

Following the tacking of the folding tabs 20, 21 and/or 23...26, said regions are sealed in a conventional manner. This brings about, at the same time, shrinkage of the film of the outer wrapper 13. It is additionally possible, however, for the pack 10 to be subjected to a separate shrink-wrapping process.

The operation of providing the tacking connections on the outer wrapper 13 is expediently integrated in the production process

of the outer wrapper 13. The apparatus according to Figure 6 is expediently part of a production line for cigarette packs.

The packs 10, which, with the exception of the outer wrapper 13, have been finished, are supplied on a horizontal pack path 31. The packs 10, which are spaced apart from one another as they arrive, run through a blank unit 32. The latter severs blanks of the outer wrapper 13 from a continuous material web 33. The blanks are held ready in an upright plane, transversely to the pack path 31, by an upright blank conveyor 34, such that the blank of the outer wrapper 13 is folded in the form of a U around the pack 10 conveyed along the pack path 31.

The pack 10 is transferred with the outer wrapper 13 to a folding turret 35. The latter is provided with a plurality of pockets 36, each for receiving one pack 10 with outer wrapper 13, in the present case eight pockets 36 of which in each case two are located in a horizontally directed receiving position and push-out position. The pockets 36 are directed radially and are open on the outside.

When the pack 10 with outer wrapper 13 folded in the form of a U is pushed in, the transverse tabs 24 projecting on both sides of the pack are folded, to be precise, by fixed folding fingers 37 arranged in or on each pocket 36.

By virtue of cyclic rotary movement of the folding turret 35, the packs 10 are conveyed into a first tacking station 38 and then into a second tacking station 39. The first tacking station 38 corresponds to a vertical position of the relevant pocket 36. Upon reaching said first tacking station 38, the side tabs 20, 21 of the outer wrapper 13 have already been folded into a position according to Figures 3 and 4. During the standstill phase, in the tacking station 38, a heated tacking element 40 is moved onto the radially outwardly directed side wall 16 of the pack 10. In this case, sealing tools 41 come into abutment against the side tabs 20, 21, to be precise in the region of the overlap 22. The sealing tools 41 are designed in accordance with the tacking which is to be produced, for example as individual protrusions for spot tacking according to Figure 3 or as a thin, continuous sealing jaw for the exemplary

embodiment according to Figure 4. The tacking element 40 is mounted pivotably on a carrying arm 42.

In the next-following station, the second tacking station 39, the tacking of the side tabs 20, 21 is completed by a correspondingly designed tacking element 43. Two tacking elements and two tacking stations 38, 39 are necessary in particular with short standstill periods of the folding turret 35.

The pack with outer wrapper 13 designed in accordance with Figure 3 or 4 is pushed radially out of the folding turret 35, and into a folding path 45, in the region of a push-out station 44. In the region of said horizontal folding path 45, those parts of the outer wrapper 13 which project on both sides in the region of the end wall 18 and base wall 19 are folded, that is to say first of all, during the push-out operation, the transverse tab 23 is folded by a fixed folding finger 46 and then the two longitudinal tabs 25 and 26 are folded by corresponding folding elements 47, so-called folding diverters.

Following the folding path 45, the pack 10, with the outer wrapper 13 in the completely folded state, passes onto a platform 48. From here, the packs 10 are raised cyclically, forming a pack tower 49 in the process, into the region of a horizontal sealing path 50 located at a correspondingly higher level.

Following the folding path 45, namely on the platform 48, the folds of the end wall 18 and base wall 19 are tacked. In order to provide the tacking connections, namely the tacking strips 29, 30, tacking elements 51, 52 are arranged on both sides of the folding path 45 and/or the platform 48, and each have two spaced-apart tacking jaws 53 corresponding to the form of the tacking strips 29, 30. The tacking elements 51, 52 are moved against the end wall 18 and base wall 19 during the standstill phase of the pack 10.

The pack 10, with the outer wrapper 13 now in the completely tacked state, is subjected to a sealing operation in the conventional manner. In this case, first of all sealing of the

side tabs 20, 21 is completed by a sealing tool 54, which extends vertically over a plurality of, namely three, packs 10 and seals the side tabs 20, 21 during three standstill phases of the packs 10 in the region of the pack tower 49.

Thereafter, the packs 10 are pushed off transversely into the sealing path 50. Within the latter, the packs 10 are positioned in two rows arranged one above the other. Sealing of the sideways directed end walls 18 and base walls 19 is completed here by sealing jaws 55, to be precise likewise during the respective standstill phases of the packs 10 in a number of sealing cycles.

During the sealing of the side tabs 20, 21 and/or of the end walls 18 and base walls 19 in steps which follow one after the other in time, it is possible for the shrink-wrapping operation of the outer wrapper 13 to be initiated or carried out in full. In the exemplary embodiment shown, the packs 10 are conveyed through a separate shrink-wrapping station 56 following the sealing of the outer wrapper 13. In the region of said shrink-wrapping station 56, the packs 10 are subjected to the action of heat in the region of the front wall 14 and/or rear wall 15. For this purpose, heating plates 57, 58, 59 are arranged above, beneath and between the rows of packs 10, said heating plates transmitting the shrink-wrapping heat to the pack 10.

The tacking and sealing temperatures may correspond to one another. A sealing temperature of approximately 145°C is suitable for tacking the folding tabs 20, 21; 23, 24, 25, 26.

Once it has left the shrink-wrapping station 56, the pack 10 is processed further in a conventional manner.

The above principle of tacking folding tabs of the outer wrapper 13 before the operation of sealing the same may also be advantageous when shrink-wrapping film is not used.

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Patent claims

1. Process for producing in particular dimensionally stable packs (10) made of (thin) cardboard, in particular hinge-lid boxes for cigarettes, with an outer wrapper (13) made of sealable and shrink-wrap film, with folding tabs (20, 21; 23, 24, 25, 26) of the outer wrapper (13) enclosing the pack (10) being connected to one another in the region of overlaps by thermal sealing, **characterized in that** the folding tabs (20, 21; 23, 24, 25, 26) are fixed in the folding position by tacking or by tack connection, in particular by small surface-area, spot or linear sealing and that subsequently the folding tabs (20, 21; 23, 24, 25, 26) are connected to one another in the region of overlapping by (full-surface) sealing.

2. Process according to Claim 1, **characterized in that** the outer wrapper (13) is a shrink-wrap film, that is, a film which shrinks when subjected to heat treatment, and that following the (full-surface) sealing of the folding tabs (20, 21; 23, 24, 25, 26) the pack (10), being provided with the outer wrapper

(13), is subjected to a (further) heat treatment to generate shrinkage of the outer wrapper (13).

3. Process according to Claim 1 or 3, **characterized by** the following features:

a) a blank for forming the outer wrapper (13) is first folded around the pack (10) in a tubular shape in such a way that side tabs (20, 21) of the outer wrapper (13) (partially) overlap one another,

b) then the side tabs (20, 21) are connected to one another in the region of the overlap by tacking, in particular by spot seals (27) and/or by a narrow continuous or interrupted sealing strip (28),

c) thereafter the folding tabs assigned to an end wall (18) and/or a base wall (19), namely transverse tabs (23, 24) and longitudinal tabs (25, 26), are folded,

d) finally, the tabs assigned to the end wall (18) and/or to the base wall (19) are connected to one another in the region of an overlap by tacking, preferably by short, narrow tacking strips (29, 30).

4. Process according to Claim 1 or 2, **characterized by** the following features::

a) the outer wrapper (13), preferably a shrink-wrap film, is folded around the pack (10) in a tubular shape in the region of a folding turret (35) in such a way that partially overlapping side tabs (20, 21) are formed,

b) the side tabs (20, 21) of the outer wrapper (13) are connected to each other by a tacking seal in the region of the folding turret (35),

c) the outer wrapper (13) is then folded to completion, in particular while being pushed out of the folding turret (35) into a horizontal folding path (45) adjoining the folding turret (35),

d) tacking connections for folding tabs formed in the region of end wall (18) and/or base wall (19), namely transverse tabs (23, 24) and longitudinal tabs (25, 26), are then provided in the region of an (upright) pack tower (49) by means of tacking elements (51),

e) afterwards, as the packs (10) are moved upwards and subsequently in a transverse, horizontal direction, preferably full-surface seals are provided to connect the folding tabs (20, 21; 23, 24, 25, 26) by means of sealing tools (54) in the region of the pack tower (49) and sealing jaws (55) in the region of a sealing path (50).

5. Process according to Claim 3, **characterized in that,** in the region of end wall (18) and base wall (19), the folding tabs are sealed by two spaced-apart, transverse tacking strips (29, 30) which are provided in the region of an overlap of the respective transverse tabs (23, 24) and longitudinal tabs (25, 26).

6. Apparatus for providing an outer wrapper (13) made of thin film, preferably shrink-wrap film, on (dimensionally stable) packs (10) made of (thin) cardboard or the like, in particular on hinge-lid boxes for cigarettes, **characterized by** the following features:

a) a folding assembly, in particular folding turret (35), for providing the outer wrapper (13) in tubular form on the pack (10),

b) by at least one tacking station (38, 39) for providing a tacking seal in the region of an overlap (22) of side tabs (20, 21) of the outer wrapper (13),

c) a further tacking station, following folding elements for folding tabs (23..26) in the region of end wall (18) and base wall (19) for the tack sealing of the folded folding tabs, namely transverse tabs (23, 24) and longitudinal tabs (25, 26),

d) at least one sealing station or sealing path (50) for the preferably full-surface sealing of the folding tabs (20, 21; 23, 24, 25, 26) in the region of the overlaps.

7. Apparatus according to Claim 6, **characterized in that** tacking stations (38, 39) for tacking the side tabs (20, 21) are assigned to the folding turret (35), with stationary tacking elements (40, 43) outside the movement path of the folding turret (35), it being possible for the tacking elements (40, 43), for carrying out the tacking operation, to be moved against the radially outwardly directed, folded side tabs (20, 21).

8. Apparatus according to Claim 6 or 7, **characterized in that** folding of folding tabs of the end wall (18) and base wall (19) can be completed in a horizontal folding path (45) adjoining the folding turret (35), and in that further tacking elements (51, 52) are arranged at the end of the folding path (45) in order to provide the tacking strips (29, 30) in the region of the folded transverse tabs (23, 24) and longitudinal tabs (25, 26).

9. Apparatus according to Claim 6, **characterized in that**, following the tacking operation, the outer wrapper (13) first of all can be sealed over the full surface area in the region of the side tabs (20, 21) by a sealing tool (54) and then, in the region of a sealing path (50), can be sealed over the full surface area on the end wall (18) and base wall (19) by sealing jaws (55), and in that the packs (10) can then be conveyed through a shrink-wrap station (56).

*****

Abstract

Process for producing packs (10) made of thin cardboard with an outer wrapper (13) made of shrink-wrap film.

Folding tabs (20, 21; 23, 24, 25, 26) of the outer wrapper (13) are connected to one another by full-surface-area heat sealing. The shrink-wrapping process for the outer wrapper (13) may be initiated as a result. In order to ensure a correct form of the outer wrapper (13), the folding tabs (20, 21; 23, 24, 25, 26), prior to the full-surface-area sealing operation, are connected to one another by a tack seal, with small, limited sealing surface areas, and are then sealed over the full surface area.

*****

List of designations

10 Pack
11 Box part
12 Lid
13 Outer wrapper
14 Front wall
15 Rear wall
16 Side wall
17 Side wall
18 End wall
19 Base wall
20 Side tab
21 Side tab
22 Overlap
23 Transverse tab
24 Transverse tab
25 Longitudinal tab
26 Longitudinal tab
27 Spot seal
28 Sealing strip
29 Tacking strip
30 Tacking strip
31 Pack path
32 Blank unit
33 Material web
34 Blank conveyor
35 Folding turret
36 Pocket
37 Folding finger
38 Tacking station
39 Tacking station
40 Tacking element
41 Sealing tool
42 Carrying arm
43 Tacking element
44 Push-out station
45 Folding path
46 Folding finger
47 Folding element
48 Platform
49 Pack tower
50 Sealing path
51 Tacking element
52 Tacking element
53 Tacking jaw
54 Sealing tool
55 Sealing jaw
56 Shrink-wrapping station
57 Heating plate
58 Heating plate
59 Heating plate

Fig.1

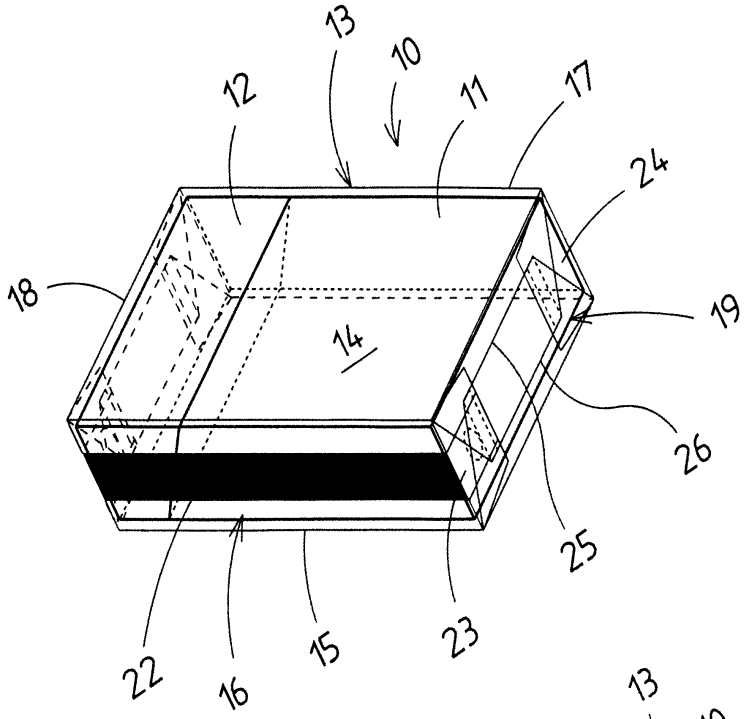
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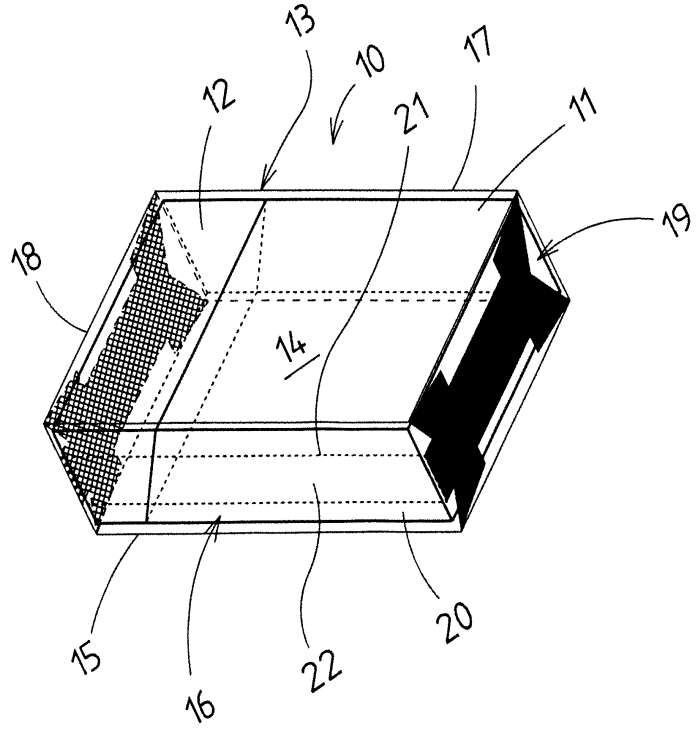
Fig.2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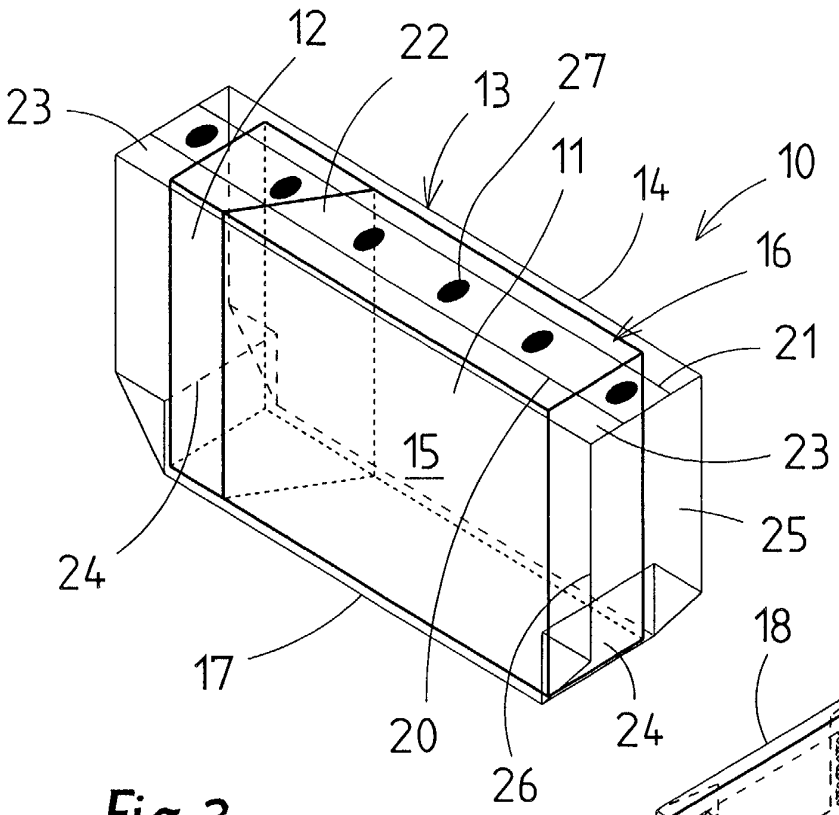


Fig.3

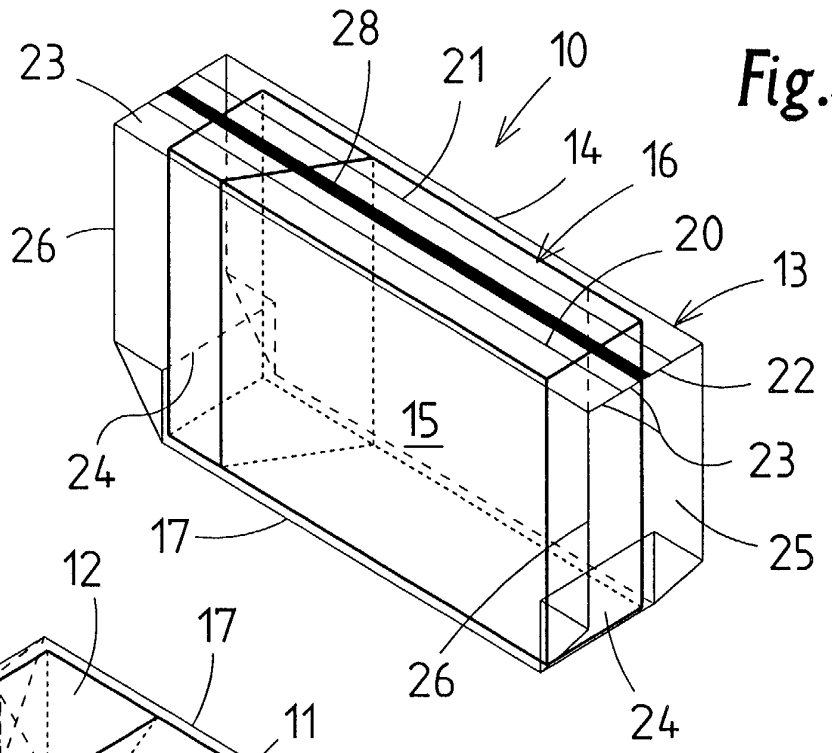
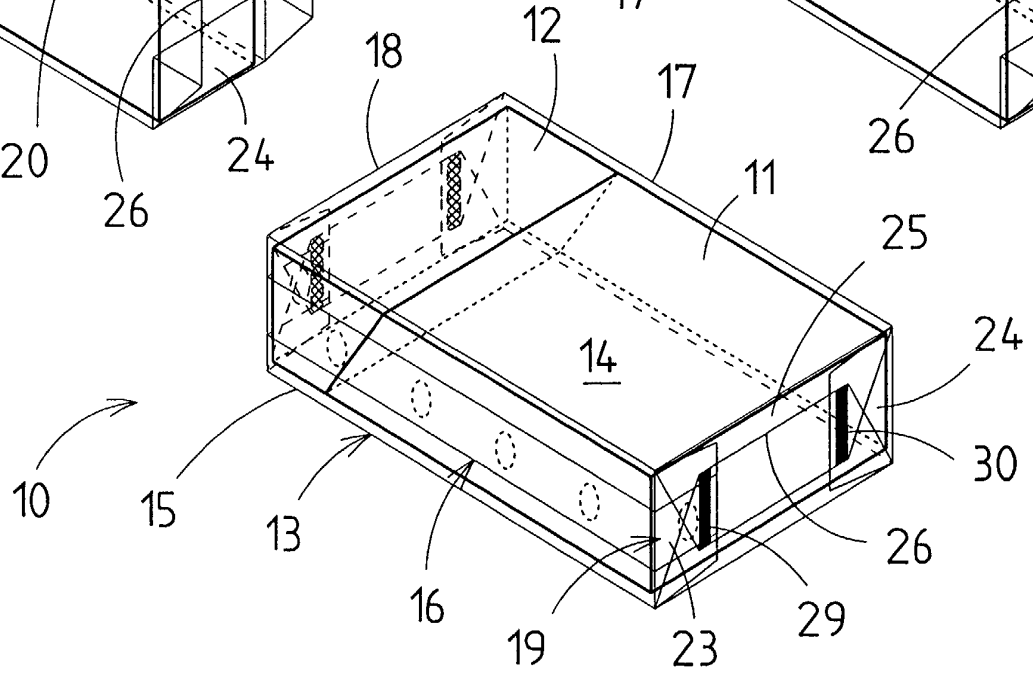


Fig.4



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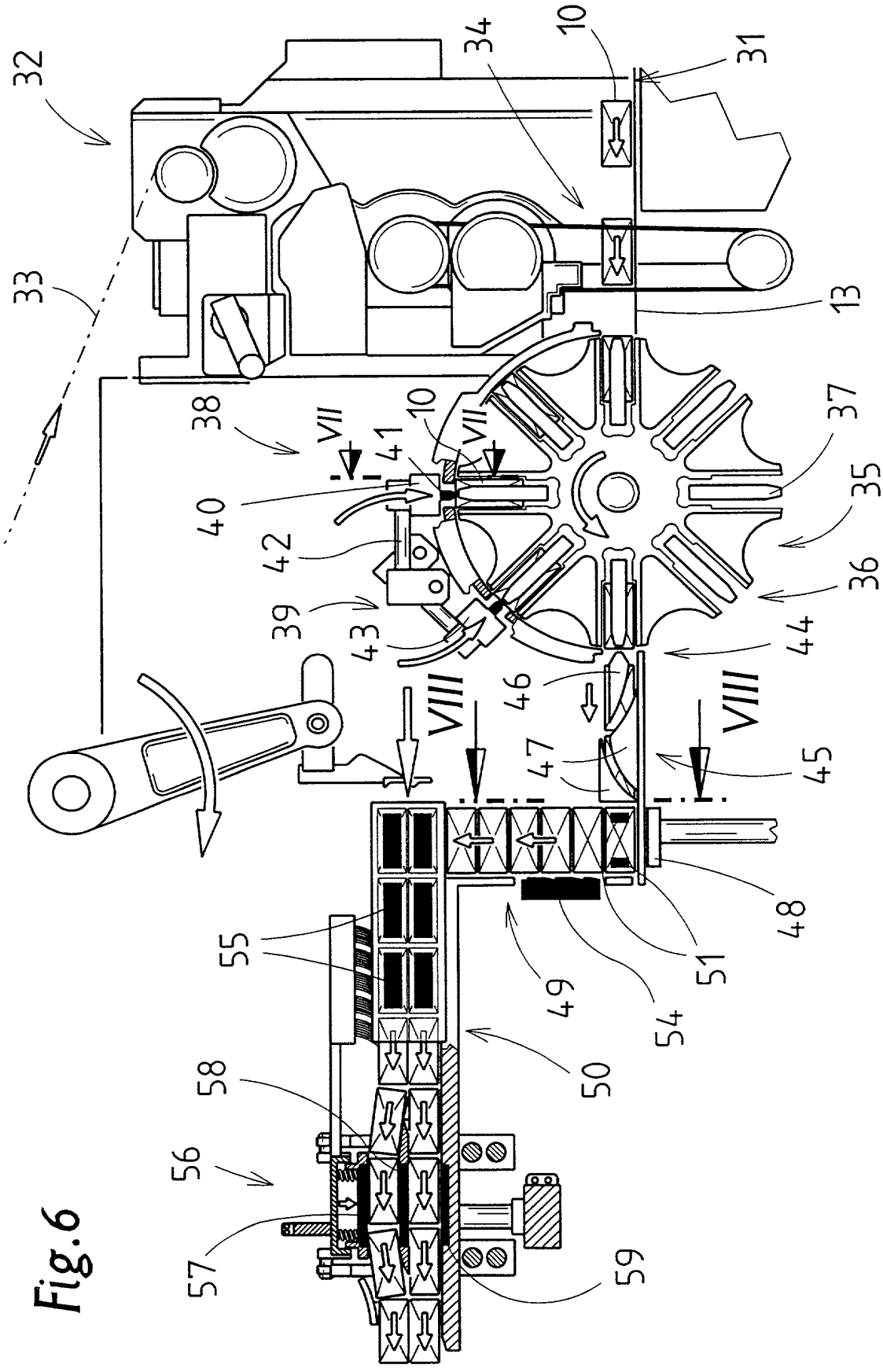
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Fig.6

Fig.7

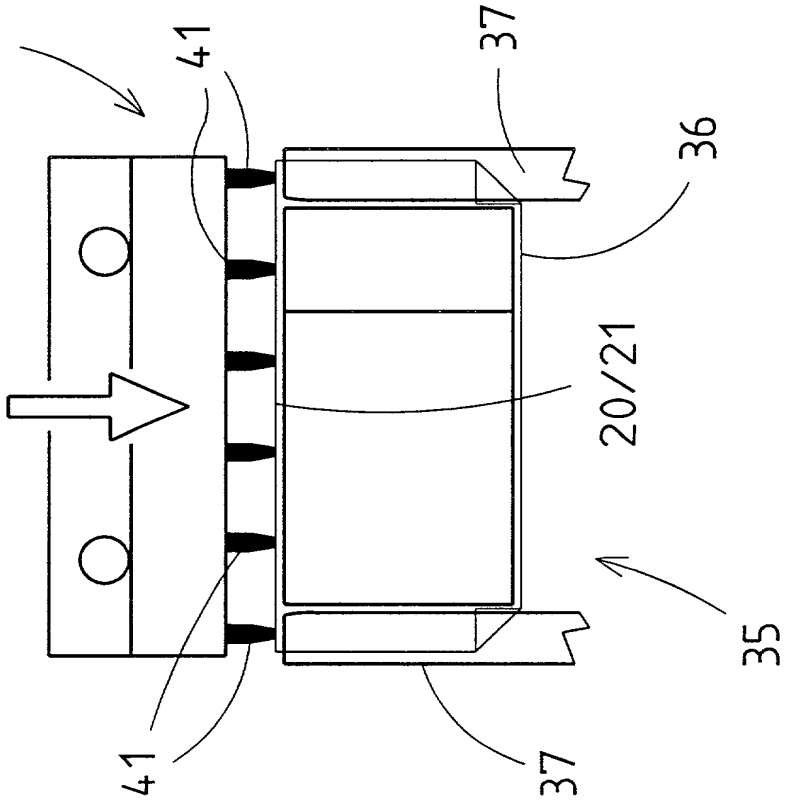
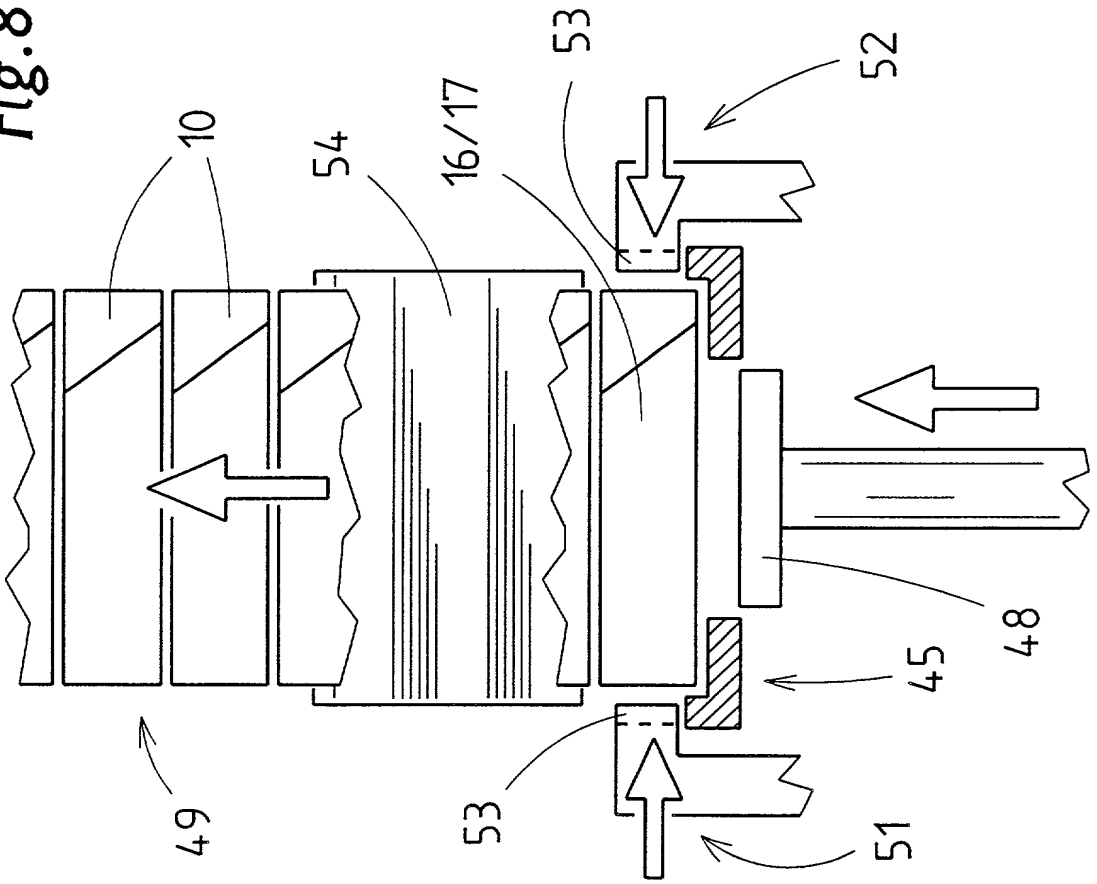


Fig.8



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DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION

[X] Declaration Submitted with Initial Filing OR [ ] Declaration Submitted after Initial Filing

Attorney Docket Number	FOCKE11
First Named Inventor	Focke, Heinz
COMPLETE IF KNOWN	
Application Number	
Filing Date	
Group Art Unit	
Examiner Name	

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled :

Process and apparatus for producing hinge-lid boxes for cigarettes

(Title of the Invention)

the specification of which

[X] is attached hereto

OR

[ ] was filed on (MM/DD/YYYY) [ ] as United States Application Number or PCT International Application Number [ ] and was amended on (MM/DD/YYYY) [ ] (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code §119 (a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or §365 (a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES	Certified Copy Attached? NO
19957415.4	Germany	11/29/99	[ ]	[X]	[ ]
			[ ]	[ ]	[ ]
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			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]

[ ] Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)

[ ] Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

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DECLARATION — Utility or Design Patent Application

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number *(if applicable)*

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: ☐ Customer Number *OR* ☐ Registered practitioner(s) name/registration number listed below → *Place Customer Number Bar Code Label here*

Name	Registration Number	Name	Registration Number

☐ Additional registered practitioner(s) named on supplemental Registered Practitioner Information sheet PTO/SB/02C attached hereto.

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Name of Sole or First Inventor: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])	Family Name or Surname
Heinz	Focke

Inventor's Signature						Date	10/30/00
Residence: City	Verden	State		Country	Germany	Citizenship	DE
Post Office Address	Moorstraße 64						
Post Office Address							
City	Verden	State		ZIP	27283	Country	Germany

☒ Additional inventors are being named on the 1 supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto

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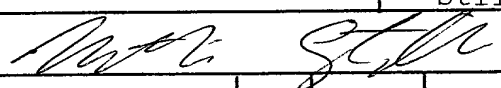
DECLARATION

ADDITIONAL INVENTOR(S)
Supplemental Sheet
Page 1 of 1

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor					
Given Name (first and middle [if any])		Family Name or Surname				
Martin		Stiller				
Inventor's Signature					**Date**	10/30/00
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Post Office Address	Döhlberger Straße 35					
Post Office Address						
City	Verden	**State**		**ZIP** 27283	**Country**	Germany

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor					
Given Name (first and middle [if any])		Family Name or Surname				
Inventor's Signature					**Date**	
Residence: City		**State**		**Country**	**Citizenship**	
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Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor					
Given Name (first and middle [if any])		Family Name or Surname				
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